

**What is Claimed is:**

1. An assay for detecting a single nucleotide polymorphism in an organism comprising:

amplifying a nucleic acid sequence of an organism using a  
5 hairpin shaped primer that discriminates between different alleles by situating its 3' nucleotide at the location of a single nucleotide polymorphism; and

measuring threshold cycle or amplification efficiency or  
amount of amplified product wherein a lower amplification  
10 efficiency or delayed threshold cycle or a difference in the amount of amplified product is indicative of a mismatch between the primer and the organism and a single nucleotide polymorphism in the organism.

2. The assay of claim 1 wherein the nucleic acid  
15 sequence of the organism is amplified by PCR.

3. The assay of claim 2 wherein the PCR performed is real-time PCR.

4. The assay of claim 2 wherein amplicon production is measured at the completion of the PCR reaction.

20 5. The assay of claim 1 wherein the hairpin shaped primer comprises DNA.

6. The assay of claim 1 wherein the hairpin shaped primer comprises RNA.

25 7. The assay of claim 1 wherein the hairpin shaped primer comprises PNA.

8. An assay kit for detecting a single nucleotide polymorphism in an organism comprising a hairpin shaped primer that discriminates between different alleles by situating its 3' nucleotide at the location of a single nucleotide polymorphism.

30 9. The assay kit of claim 8 wherein the hairpin shaped primer comprises DNA.

10. The assay kit of claim 8 wherein the hairpin shaped primer comprises RNA.

*of 30-90 base pairs length pg 15*

11. The assay kit of claim 8 wherein the hairpin shaped primer comprises PNA.